

# AIR MINISTRY

## SYNOPSIS

OF

## PROGRESS OF WORK

IN THE

## DEPARTMENT OF CIVIL AVIATION

*1st May, 1919, to 31st October, 1919.*



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*Presented to Parliament by Command of His Majesty.*

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## AIR MINISTRY.

# Synopsis OF Progress of Work IN THE Department of Civil Aviation

(1st May, 1919, to 31st October, 1919).

### **I.—INTRODUCTION.**

Except for a brief period during Easter week this year, civil flying did not open officially until 1st May, 1919, and the six months which have since elapsed forms perhaps a convenient period on which to make a preliminary review of the work done by, and to estimate the future of, the Department of Civil Aviation.

Between 12th February—on which date it was announced in the House of Commons that the Government had decided to set up a Department of Civil Aviation—and 1st May, the official date of the opening of civil flying, a small staff began to attack the multiplicity of problems and difficulties attending the transition period from war to peace, which had to be met in the commencement of civil aviation. There were the adjustment and redistribution of activities between the service and civil sides; the framing, with the assistance of representatives from the industry and other experts, of the Air Navigation Regulations for the control of civil flying at home, as distinct from the International Air Convention, governing the regulations for international flying; the necessity for deciding upon which routes traffic was most likely to follow and develop, and the aerodromes which should therefore be retained in the general after-war liquidation.

There were also a number of other problems of a kindred nature to assist in the solution of which there were no landmarks, no established precedents and no accumulated experience.

### **II.—PROGRESS.**

(a) **Relations with Foreign Countries.**—The International Air Convention, which was in the main based on the Air Navigation Regulations drawn up for the control of civil flying at home, was signed on 14th October by eleven out of the thirteen nations, which were parties to it, the United States and Japan not yet being in a position to sign.

The terms of this Convention were made public some months ago, but it was considered desirable to anticipate its becoming operative by provisionally opening traffic by air with certain foreign countries, as it was thought that aerial transport firms could not too soon gain experience of running regular international services, both for the benefit of the industry, and the early development of the air routes of the Empire on a commercial scale.

Great pains were therefore taken to make temporary agreements with other countries, and such were concluded with Belgium, France, Holland, Italy and Portugal, while permission for individual flights was obtained from Denmark, Norway, Spain and Switzerland; and steps have since been taken which it is hoped will ensure the subscription of Holland, Spain and Switzerland to the International Convention at no distant date, and later of the Scandinavian countries, so that one code of rules for the air will obtain throughout the whole of Europe.

The conclusion of these provisional agreements has enabled British aircraft belonging to commercial firms to visit Amsterdam, Brussels, Christiania, Copenhagen, Lausanne, Madrid, Paris, and Stockholm, whilst a demonstration flight for civil purposes carried out by R.A.F. aircraft was made as far as Helsingfors.

Every effort has been made to assist British firms to establish regular services between London and Paris, London and Brussels, and London and Amsterdam.

(b) **Reconnaissance.**—Considerable progress has been made with the reconnaissance and development of imperial air routes.

The Cairo-Karachi route has been opened for military purposes, and will be available for civil traffic at an early date. That from Cairo to the Cape has been surveyed, and a chain of landing places established. Of the latter the section lying in the Union of South Africa should shortly be available for the use of civil enterprise, and the whole route should be capable of being flown on an experimental basis before the end of the year. A full reconnaissance of the route from India to Australia has also been completed.

(c) **Air Navigation Regulations.**—The Air Navigation Regulations which came into force on 1st May, 1919, were based on war experience and on an estimate of the requirements of civil aviation. In a few directions experience has shown that there are omissions, while in others the Regulations have been found to be somewhat in advance of requirements and their strict enforcement up to the present has proved undesirable. It has not always been easy to administer the Regulations so as to secure the safety of the public without handicapping the expansion of air work, but frequent consultations between the department and representatives of the industry and the goodwill of all concerned have enabled a very fair measure of success to be obtained in this respect. Any defects in the Regulations or in the method of administering them brought to light by experience are corrected as rapidly as possible.

An Air Navigation Bill, to make operative the International Air Convention recently signed in Paris in accordance with its requirements, is being drawn up under which the Regulations revised to date will be reissued.

The following approximate figures, which have been supplied voluntarily by certain of the firms engaged in civil air traffic, are interesting as showing the extent of the work carried out, and for the mileage covered, the number of accidents must be regarded as remarkably small.

Number of hours flown	..	..	..	..	..	4,000
Number of flights	..	..	..	..	..	21,000
Number of passengers	..	..	..	..	..	52,000
Approximate mileage	..	..	..	..	..	303,000
Total number of accidents	..	..	..	..	..	13
Number of fatal accidents	..	..	..	..	..	2
			<i>Total</i>		<i>Per 1,000</i>	<i>Per 1,000</i>
			<i>Numbers.</i>		<i>Flights.</i>	<i>hours flown.</i>
Pilots killed	..	..	2	..	·095	·5
Pilots injured	..	..	6	..	·286	1·5
Passengers killed	..	..	Nil	..	Nil	Nil
Passengers injured	..	..	10	..	·476	2·5

Percentage of passengers injured to those carried, ·019; in other words, for every 5,200 passengers carried only one has been injured.

It will be noted that the great majority of the flights were of short duration.

Indeed, much of the work during the period under review may be said to have been of an educative character. At the same time, since the greater number of accidents occur in getting off and landing, the proportion of accidents to flights made is a truer guide than that for hours flown. The figures clearly establish the fact that firms are intent on securing the safety of the public and also that the regulations in force are in principle suitably designed to attain that object.

(d) **Accidents.**—Stress has been laid on the necessity for the punctual report and investigation of accidents, as only by this means can the weak points in administration, personnel and material be eliminated and the safety of the public proportionately increased. The organisation for this work built up during the war by the R.A.F. has been absorbed by the Civil Aviation Department. On receipt of the report of an accident involving a fatality, or injury to personnel, or serious damage to a machine, experts are immediately sent to investigate matters on the spot. This work has fortunately been exceedingly light and the facilities afforded by the firms concerned have enabled the necessary investigations to be carried out satisfactorily.



(e) **Aerodromes and Licensing.**—In the same way as ships require harbours, so aeroplanes and seaplanes require aerodromes, which have to be built, inspected and licensed. Licences also are necessary for the pilots competent to control the machines, and for the officials at the aerodromes qualified to pass machines as fit for flying, while every civil machine has to be registered and numbered in the same way as a motor car, and, if flying for hire, must in addition be certified as “airworthy.” A special branch of the Department of Civil Aviation deals with this and kindred questions, and between 1st May and 31st October, has granted the following licences and certificates :—

Licences for Pilots	..	..	..	..	..	374
Licences for Ground Engineers	..	..	..	..	..	258
Licences for Engineers	..	..	..	..	..	1
Licences for Navigators	..	..	..	..	..	2
Licences of Aerodromes	..	..	..	..	..	92
Certificates of Registration	..	..	..	..	..	303
Certificates of Airworthiness	..	..	..	..	..	241

The reason that there has as yet been little or no demand for engineers' or navigators' licences, is that conditions which would necessitate the inclusion of these classes in the crew of an aircraft are not yet common.

The large majority of the aerodromes licensed have been those in the vicinity of towns required temporarily by firms engaged in carrying passengers for short flights.

It is believed that the London terminal customs aerodrome at Hounslow is the only one of its kind in Europe, and that the organisation for dealing with regular traffic arriving by air from other countries has not elsewhere been so fully developed. Lympne for aeroplanes and Felixstowe for seaplanes have also been constituted as customs aerodromes.

During the six months under review, an approximate sum of £2,000 has been received at Hounslow, in payment of housing and accommodation fees, etc., apart from the sale of petrol and oil. From this fact it is fair to assume that a definite revenue will be derived from the main aerodromes of the future.

In addition to the licensing of aerodromes already carried out negotiations are in progress for the establishment of land or sea aerodromes under the control of the Municipal Authorities, to serve the undermentioned localities :—

Edinburgh.	Bradford.
Newcastle.	Hull.
Southport.	Manchester.
Liverpool.	Margate.
Leeds.	Southampton.

For emergency landing grounds a large number of possible sites have been notified by Lords Lieutenant. The inspection of these sites, however, must, of necessity, cover a considerable period, and some time must elapse before maps showing the emergency landing grounds available in each county can be completed.

(f) **Communications.**—One of the lessons learnt during the war was the supreme necessity for rapid ground communication. It was early realised that for civil aviation ground communications, wireless, etc., must be speeded up, and greater facilities afforded, in order that the arrival and departure of machines should be promptly reported. For this purpose the ordinary public telegraph and telephone service is often insufficient. Owing to the time occupied in conveying the message to and from the nearest public office, and the pressure of traffic at the present time on the long distance telephone lines, especially abroad, the aeroplane may arrive as soon as, or even before, the receipt of the message announcing its departure. The scope of the branch at the Air Ministry in charge of this particular work covers the requirements of both civil and the service sides. For the present purpose, however, it is proposed, as far as is possible, to refer only to its functions in regard to civil aviation.

The duties of the Communications Branch may be regarded as falling under two broad heads, which, for the sake of convenience, may be termed *signals* and *navigation*.

**Signals.**—Under the first heading an important part of the work carried out has been in connection with wireless telegraphy and telephony, and the development of

aerial navigation by means of directional wireless. Wireless stations have been erected at Hounslow and Lympne, and wireless liaison has been established with the French for the purpose of the London-Paris air route. By this means machine reports and weather reports have been successfully exchanged, the number of such messages on this route averaging 30 a day. From the experience thus gained it has been possible to inaugurate similar arrangements, which are now nearly complete, for the Belgian and Dutch routes.

Meteorological reports will in future be transmitted almost entirely by wireless telegraphy. At present weather reports are received by this means from British and Continental Stations for the information of the Meteorological Service, and weather forecasts distributed three times a day from the Air Ministry.

A complete scheme of wireless organisations for the entire Meteorological Service has now been prepared. In addition to Communications, the branch is responsible for the supervision of the training and examination of the wireless personnel.

Regulations are also being drawn up in conjunction with the Post Office for a revised wireless operator's certificate in order to provide for qualified "Air" wireless operators. Similarly, the conditions for obtaining licences to work wireless stations have been revised to include the use of wireless in commercial aircraft and from ground to air.

It may be noted that the Communications Branch has, since the armistice, been instrumental in arranging for the release for public use of—

Switchboards	..	..	..	..	..	..	63
Trunk Lines	..	..	..	..	..	..	96
Exchange Lines	..	..	..	..	..	..	324
Telephones	..	..	..	..	..	..	2,040

*Navigation.*—On the navigational side, the whole of the London to Paris air route has been surveyed, an experimental strip map prepared for aerial purposes and "flying directions" compiled containing information as to aerodromes, landing grounds, wireless and meteorological data. This is the first of a comprehensive library of air maps and flying directions which it is hoped will be produced for all the main routes. Charts and maps are also prepared and issued for all intended flights on new routes.

In co-operation with Trinity House, proposals have been considered for the installation of an aerial lighthouse system on the London to Paris route, and an experimental lighthouse has been erected at Hounslow. Preparations have also been made for the lighting of the aerodromes on this route, in the event of firms setting up services which necessitate night flying.

(g) **Collation of Information.**—Technical information is collected and collated by the Information Branch from the various foreign journals with a view to assisting the constructive side of the industry, civil and service. From time to time, as thought necessary, technical memoranda on different subjects are issued. The Research Branch of the Air Ministry is kept supplied with information, as also is the business community interested in civil aviation.

In regard to foreign markets, close co-operation has been established with the activities of the Department of Overseas Trade and the various naval and military attachés. By these means British firms are supplied with information in the form of periodical summaries, on such matters as foreign aviation, amalgamation of foreign aircraft firms, regulations and bye-laws affecting civil aviation in foreign countries. During the past two months 45 special notices have been sent out through the Society of British Aircraft Constructors, and numerous requests from British firms for information on urgent questions have been received and answered.

This Branch is also responsible for the issue of Official Press *Communiqués* on all questions affecting civil aviation.

(h) **Meteorology.**—To no other form of human activity are the vagaries of the weather so vital as to aviation. Information of air currents, and more especially of mists and fog, may make the difference between success and failure. For this reason, and although the claims upon a Government meteorological organisation of the Army, the Navy, the Board of Agriculture and Fisheries and other bodies concerned were fully recognised, it was recently decided by the Cabinet to transfer the Meteorological Office and attach it to the civil aviation department of the



Air Ministry. With the exception of one or two details, the arrangements for this transfer are now complete.

As much as possible of the personnel, etc., are being moved from South Kensington to Kingsway; but lack of accommodation makes a complete transfer at present impracticable. A new Meteorological Committee has been formed, with the Controller-General of Civil Aviation as President, and Sir Napier Shaw, Director of the Meteorological Office, as Chairman. On this Committee the Royal Society has two representatives, and the Admiralty, War Office, the Board of Agriculture and Fisheries, the Board of Trade and Colonial Office, have each nominated one representative.

Endeavours are being made further to assist scientific research, and, in addition to the ordinary routine work of the Meteorological Office, special attention is now being devoted to the requirements peculiar to flying.

A system of weather maps is being produced at six-hour intervals from information supplied by a network of R.A.F. and Civil Meteorological Office Stations, and reports and forecasts covering various aerial routes have been prepared and issued, together with maps showing the speed and direction of the upper wind over each.

In connection with the Cape-Cairo route, a statement has been drawn up showing the annual variations of the weather by months.

Special attention has been given to the London-Paris route, for which the service of weather reports is being improved. Good communications are vital to an efficient meteorological service and in this particular some difficulty is necessarily experienced in dealing with the large area and many foreign countries now concerned. All countries signatory to the Air Convention undertake to carry out certain arrangements with regard to communications; but the speed in setting up a through system must necessarily be that of the slowest country.

One of the first steps consequent upon the transfer of the Meteorological Office to the Air Ministry has been the closing down and elimination of many R.A.F. meteorological units called into existence during the war. General after-war requirements for meteorological information have been considered, and a scheme formulated providing for the least possible number of stations necessary. The policy followed has been to obviate overlapping between flying and non-flying meteorology.

The personnel of all meteorological stations at home is being placed on a civilian footing. Where service personnel is employed, as for instance in Egypt, it will be trained by the Meteorological Services. The necessary steps for the demobilisation of service personnel and their substitution by civilians have been taken.

(i) **Airships.**—Although the rigid airship has not been exploited in this country to the same extent as the aeroplane, the commercial possibilities of this type of aircraft in connection with long-distance flights are fully realised. By the curtailment of the government airship programme, a certain number of airships, in various stages of construction, became available for civil enterprise. A public meeting was held to explain the position, and those interested were invited to consider the formation of a company with a view to taking over these surplus airships and to investigate the commercial value of this type of aircraft. The formation of this company is now under consideration.

(j) **Staff.**—The staff of the Department of Civil Aviation on 31st October consisted of a total of 143, of which 52 are administrative officials and 91 clerical subordinates, at a total salary of £50,000 per annum. These figures include the Air Ministry meteorological staff, but not the personnel of the Meteorological Office recently transferred to the Air Ministry.

It should be borne in mind that the staff of the Communication, Accidents, and Meteorological branches are engaged on technical work for both the civil and service sides.

The selection of a staff to deal with the many questions involved has not been an easy task owing to the fact that the Department must in the nature of things be a civil one, and that those officers possessing the requisite administrative and technical experience can usually be found only among those who have served in or with the Royal Air Force. It has been impossible until conditions are more certain to offer fixity of tenure in the Department of Civil Aviation and the terms of appointment have been necessarily brought into unfavourable comparison with

the improved rates of pay recently conceded to the Royal Air Force. The result has been that recruitment has been difficult and slow. Steps are being taken to remedy this.

### III. GENERAL CONSIDERATIONS AND CONCLUSIONS.

This brief summary of the work carried out during the last six months, and the organisation of the Department of Civil Aviation has been written as a record of work done. If it appears that a useful purpose will be served it is proposed to issue a further Synopsis at the end of another period of six months. No attempt has been made to suggest the potentialities of civil aviation. The speed at which it will develop cannot be gauged even approximately, but the possibilities are undoubtedly great, and there seems no doubt that when once the postulates of reliability, safety, comfort and economy have been met, as they will be, civil aviation must play an increasingly important part in the development of civilisation.

It is in any case, perhaps, not too much to say that when civil aviation has developed it will be the main reserve of strength from which the R.A.F. will draw in times of stress. The R.A.F. of the future should be capable of rapid expansion and of the organised assimilation of large numbers of personnel and material at short notice. As the mercantile marine reinforced the Navy during the war, so should civil aviation be regarded as the potential reserve of the R.A.F. in future crises. This source of supply can only be regarded as satisfactory if civil aviation is in itself a healthy and well-developed body. The building up of such a body on a true basis is largely dependent upon the growth of a steady demand for quicker communication. Irregular and spasmodic demands keep the cost of such communications at a high figure, and do not, therefore, assist development.

The carriage of mails promises to be one of the most important and regular demands which can serve to develop civil aviation, and to place aerial transport concerns on a firm footing. The future of aerial mail services lies on those routes where a material saving of time can be effected so that a definite commercial advantage may be obtained. In England, railway communications and distances are such that letters posted at the end of the business day can be delivered early next morning at almost every large town by the regular train services. The Postmaster General is doubtful, therefore, whether the demand for express mails during the day time between the more distant towns in the United Kingdom is likely to be sufficiently extensive to meet the considerable expense of running such a service for mails only. But if commercial services were established for passengers and goods, the opportunity would be taken to utilise them for express letters.

The line of development of aerial mails would seem to lie more on the continental and imperial routes where the long distances give more scope for the element of speed. For example, in normal times the ordinary time of transit by railway is 36 hours to Turin, 48 hours to Rome, 23 hours to Berlin, 58 hours to Christiania, and 24 hours to Berne. Over such distances the potential saving by aerial transport is considerable. If such acceleration could be obtained, and regularity of service kept up, sufficient correspondence might be attracted to enable the extra fee to be fixed at a relatively small figure. When regular services to extra-European countries become practicable, the gain in time will be still more marked.

The more such services can be brought into being, the larger is the area over which the overhead charges are spread, and the lower becomes the cost of each additional service which automatically produces an increased demand for such services on routes where high cost has hitherto negatived the desire for speed.

It has been the object of the Department to ensure the safety both of the flying and non-flying public, without imposing irksome restrictions on the various firms concerned. In numerous problems on which technical advice has been required, the Department of Civil Aviation has received the assistance of the directorates of research and aeronautical inspection of the Department of the Director-General of Supply and Research, which is a separate Department in the Air Ministry from that of civil aviation. Hitherto all machines employed by civil aerial transport firms have been converted war machines, and although numerous new types are on the stocks, it may be said that no true commercial machine has yet appeared. Divergencies in type and construction between service and civil aircraft will, however, rapidly appear.

Partly owing to the difficulty of determining the future composition of the R.A.F., and the consequent uncertainty of what aerodromes will be required by the



Service, it has not yet been possible to settle the aerodromes to be retained by the civil side, and to complete negotiations with the municipalities and others concerned. An Advisory Committee has been discussing this and kindred problems, together with the question of imperial air routes, and their report is expected shortly.

The work of the Department must necessarily be of a pioneer character. The results of its labours—if indeed the foundations of the new scheme of things have been well laid—can only become visible in their entirety in years to come. Had the spade work not been done, however, it is doubtful whether this country would have been able to inaugurate and maintain the first international air services.

It may be questioned whether civil aviation in England is to be regarded as one of those industries which is unable to stand on its own feet, and is yet so essential to the national welfare that it must be kept alive at all costs.

If this question is answered in the affirmative there appear to be three methods of assisting it:

(1) By means of direct Government subsidies—it is in this way that France has decided to act, and 18,000,000 francs have already been earmarked for this purpose.

(2) By recognising that *at the beginning* the British aircraft industry cannot stand on its own feet, and that to ensure its existence, although foreign to usual British practice, some form of *direct* Government assistance, probably in the shape of a grant to approved aerial transport companies for mileage and weight carried, is a necessity.

(3) By following the principle usually accepted in this country, that if an industry is to survive it must stand as nearly as possible by itself, and that a policy of “doles” is unsound. In this case the assistance given would take the indirect form of the provision of certain “key” aerodromes and shed accommodation at home and on the Empire routes; and the collation and issue of information, including meteorological data, and the provision of communications.

The problem is how best to tide over the difficult transition period through which we are passing. Adhesion to the British principle of independent private enterprise will undoubtedly be right eventually, but if a limited industry is to be maintained—as it must be to meet the requirements of the Royal Air Force—it is for consideration whether it will not be necessary to adopt a combination of (2) and (3) above.

(Signed) F. H. SYKES,

*Controller General of Civil Aviation.*

1st November, 1919,

*Air Ministry.*

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